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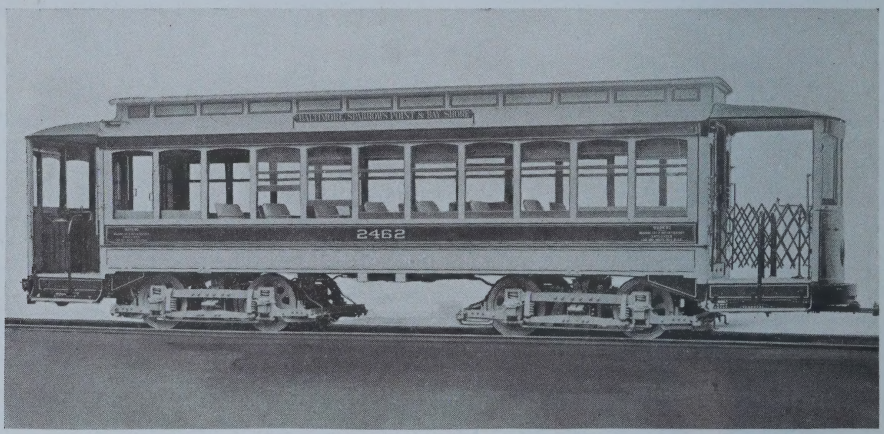
BALTIMORE AND CALVERT STREETS, BALTIMORE—A CENTRAL POINT OF THE ELECTRIC RAILWAY SYSTEM



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—Brill Patented Semi-Convertible Car with Special Type Platform — Standard of the United Railways & Electric Company, Baltimore— Mounted on Brill No. 27-E-1 Trucks for High Speed Service

Conditions Which Govern the Type of Car for City Service—Baltimore*

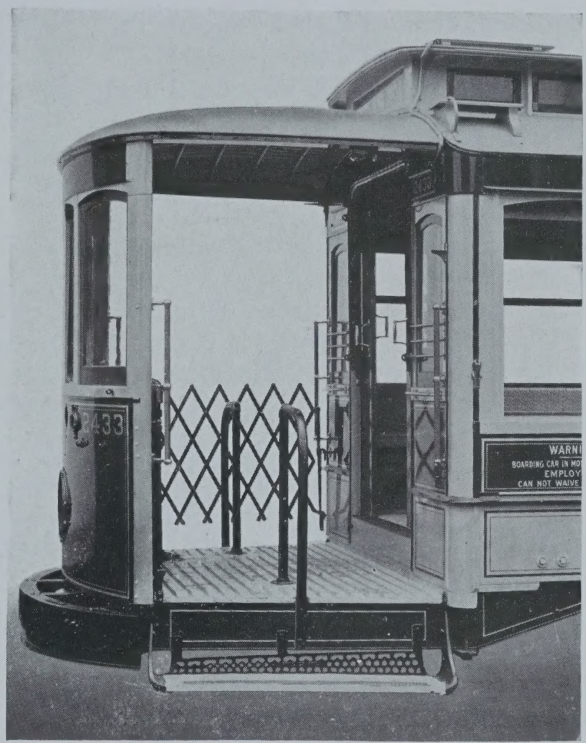
A review of the preceding articles in this series discloses the fact that the platforms, or entrances and exits, of the cars which are standard in New York, Detroit and Chicago have been designed to effect rapid loading and unloading of passengers and thereby to expedite the movement of the cars. In all of the arrangements the same principle has been followed of separating the two streams of passengers, yet no two of the arrangements have been exactly the same. Still another solution of this problem is disclosed in the design of the platform, which is the distinctively characteristic feature of the standard car of the United Railways and Electric Company of Baltimore, Maryland.

In the Baltimore car passengers entering the car are separated from those leaving by a platform division rail somewhat similar to that used in Detroit, but in two sections, as shown in an accompanying engraving and in a floor plan. By standing between the two rails, or at either side, the conductor can guide the movement of passengers and prevent them from going the wrong way. The rails

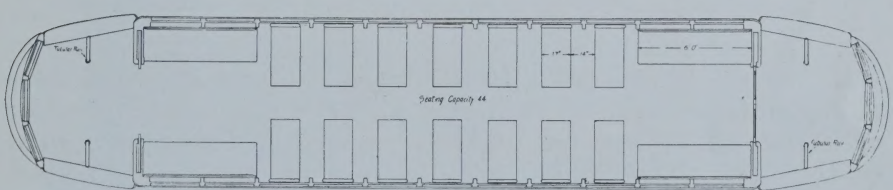
* This is the fifth of a series of articles describing in a general way the standard type of car in many of the larger cities of the world, with information indicating the conditions which have been the influencing factors in the adoption of the several types. The next article will describe the type of car and the conditions in London.

also serve as grab handles for passengers boarding and alighting and for passengers standing on the platform.

The seating arrangement of the Baltimore cars conforms to that which is the general standard throughout the cities of the United States — namely, longitudinal seats at the ends, seating four passengers each, and cross seats for the balance of the car. The window arrangement is the Brill patented semi-convertible, which employs two sash per window, both sash sliding into the roof, the lower one automatically engaging the upper and raising it. It is the most largely used window system, both for city and inter-urban cars, because it provides a type of car which meets all climatic conditions, is self-contained and eliminates the wall window pocket



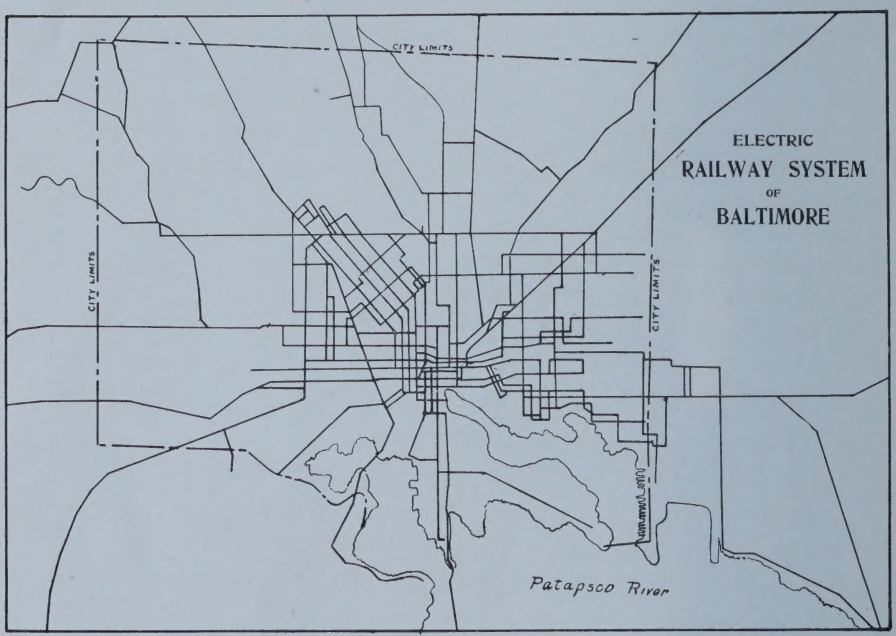
CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE— The Baltimore Platform is Designed to Accelerate Movement by Separating the Two Streams of Passengers



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE — Floor Plan of Brill Semi-Convertible Car With Standard Baltimore Type Platform

with its awkward sash arrangement, high window sills and reduction of interior width of the car.

The J. G. Brill Company and the John Stephenson Company have jointly built 340 cars of the standard type for the United



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE — The Suburban Lines Serve a Territory from Three to Twenty Miles Beyond the City Limits

Railways & Electric Company within the last three or four years. The principal dimensions of these cars have been as follows:—

Length over end panels	30′ 8″
Length over platforms	41′ 11″
Length of each platform	5′ 7½″
Width over posts (straight sides)	8′ 2″
Seating capacity	44

Some of the cars have been mounted on Brill No. 27-GE1 trucks and the others on Brill No. 27-E1. The cars with trucks of the latter type have been used for service on the suburban lines of which the United Railway & Electric Company has a number, as may be seen by an examination of the accompanying map. These suburban lines are from six to twenty miles long, the dis-

tance from the business center of the city limits by the lines of the railway being, in most cases, three or four miles. Within two miles of the City Hall the running time is one mile in eight minutes ; outside of this the cars run one mile in from four to five minutes, except on the Bay Shore suburban line, where they run one mile in three minutes. On the latter line No. 27-E1 trucks are used.

The population of Baltimore is approximately 575,000. The city is a large jobbing center for the South and is also one of the principal export points of the United States. The density of population is considerably lower than that of any of the cities thus far considered, with the exception of Detroit, and is admirably served by the 394 miles of electric railway and 2,000 cars of the United Railways & Electric Company.

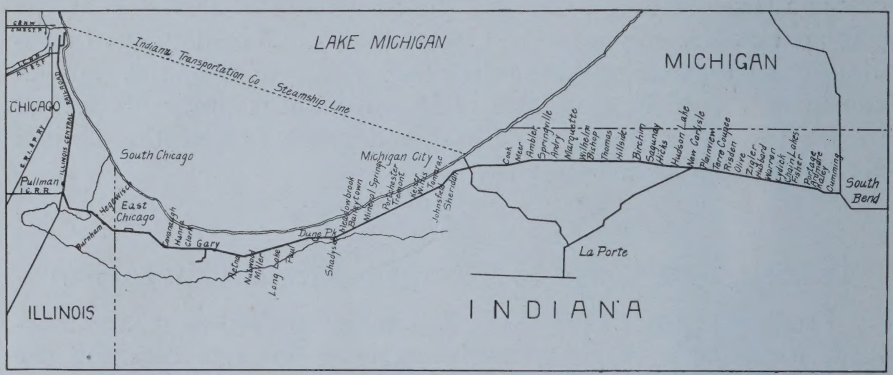
Interurban Cars for Single-Phase Operation

From the plant of the G. C. Kuhlman Car Company, at Cleveland, there have recently been delivered ten fine cars for the Chicago, Lake Shore & South Bend Railway, one of the most conspicuous examples of single-phase operation in the United States. The road is a new one and has recently been described in detail in the technical press of the United States, so that only a general outline of its features will be here presented.

An accompanying map shows the location of the road, which, by connection with the Illinois Central at Pullman, Ill., affords

Kuhlman Car for Operation on Single-Phase Railway

transportation from the business center of Chicago to South Bend, a distance of 92 miles. From the terminal of the Chicago, Lake Shore & South Bend Railway at Pullman to the terminal at South Bend is 77.5 miles, and the electrically operated limited trains cover this distance in 2 hours and 15 minutes. It requires 45 minutes to travel from Randolph street, Chicago, to Pullman, 15 miles, on the Illinois Central suburban express trains, thus making the running time between Chicago and South Bend three



CARS FOR SINGLE-PHASE OPERATION — Map of the Chicago, Lake Shore & South Bend and Connecting Railways

hours. But six stops are made between Pullman and the Indiana terminal by the limited trains, but local trains stop at all street crossings in the cities and at all highway crossings in the country, and make the 77-mile run in 2 hours and 55 minutes.

The principal towns between terminals are Kensington, Hammond, East Chicago, Indiana Harbor, Gary and Michigan City, but the entire territory around the south shore of Lake Michigan has recently shown a remarkable industrial growth, and in addition the road passes through a prosperous country after leaving the lake shore at Michigan City. The conditions were such that the most modern construction was warranted, and the road-bed, and in fact the standards throughout, conform closely to steam railway practice. The maximum gradient of 2 per cent. occurs only once. The maximum curvature, except in cities, is three degrees. The rails are 70-pound steel laid on white oak ties, and all bridges over railways are steel. Highway bridges are of reinforced concrete.

Cars for Single-Phase Operation — Interior from Smoking Compartment — The Brill Seats are Upholstered in Imitation Leather

The power house and shops of the road are located at Michigan City, which is approximately midway between terminals. Single-phase current is distributed direct to the trolley at 6,600 volts and to static transformer stations at 33,000 volts. Three turbo-generators, each with a capacity of 1,500 kw. single phase, comprise the generating units. There are nine substations, two located respectively 24 miles east and west of Michigan City at the terminals of a 33,000 volt transmission line, and the others available for supplying low tension sections in towns, if desired, and to the car shops.

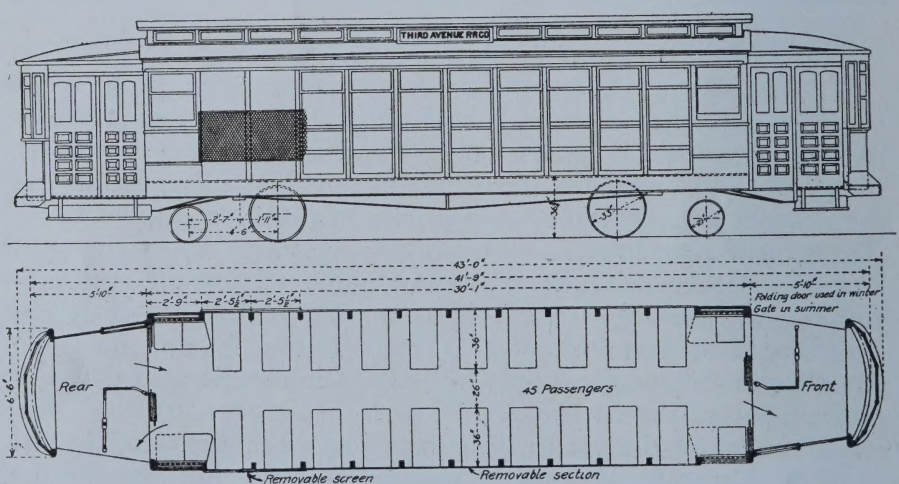
The cars for the road which have just been delivered by the G. C. Kuhlman Car Company, will be used as trail cars for the present, but are arranged for their ultimate equipment as motor

cars. They have the following general dimensions: Length over all, 50′; length of body, 40′; extreme width, 10′; height from floor to top of roof, 9′5″; distance between truck centers, 28′4″. The underframing comprises 6″ I-beam center and intermediate sills with continuous long leaf Georgia pine fillers and heavily plated side sills. The needle beams are 6″ I-beams.

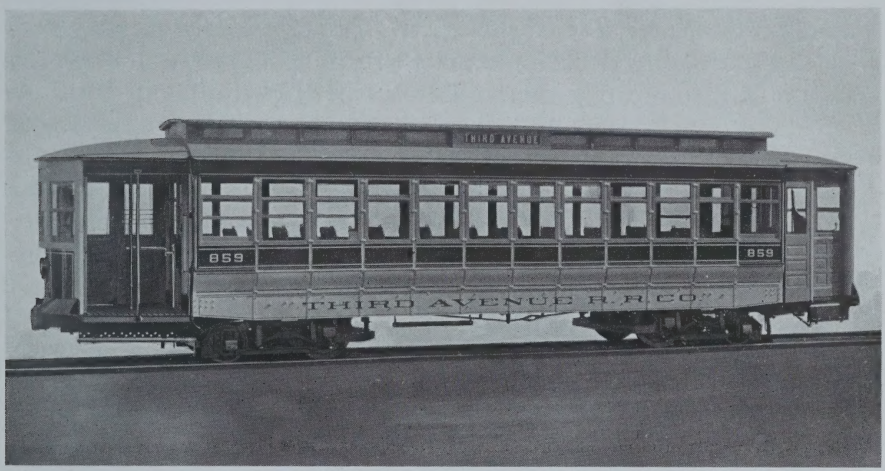
The cars are divided into a smoking and a general passenger compartment, both of which have quartered oak finish. The windows are arranged in pairs, with a stationary art-glass top sash extending over each pair. Curtains are provided which cover the lower sash only, leaving the ornamental glass in the top sash exposed to view inside of the car. The deck sash are also glazed with art glass and have oval tops, carrying out the semi-empire style of deck.

Convertible Pay-As-You-Enter Cars for New York City

The J. G. Brill Company is now making deliveries on an order of 300 cars for the Third Avenue Railroad, New York City, which calls for one of the most interesting types of cars for city service which has ever been built. The type is an adaptation of

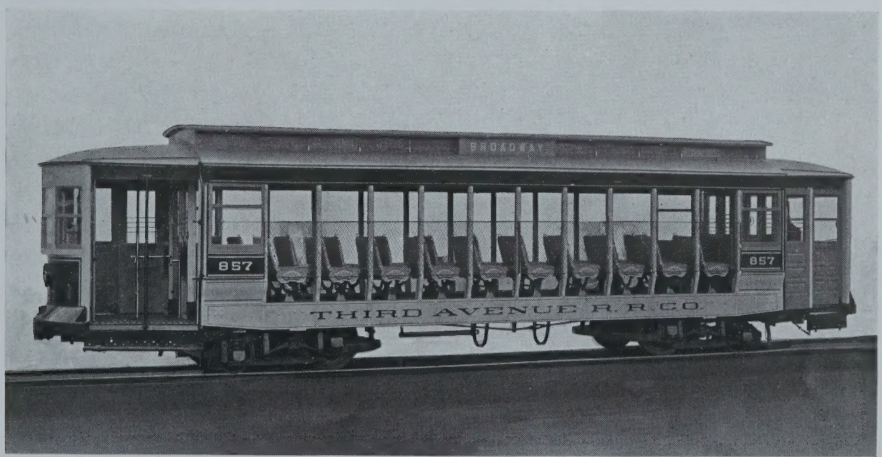


Convertible Pay-As-You-Enter Cars for New York — Elevation and Floor Plan with Principal Dimensions



CONVERTIBLE PAY-AS-YOU-ENTER CARS FOR NEW YORK—One of the Cars Ready for Winter Service—Mounted on Brill No. 39-E Center Bearing Maximum Traction Trucks

the Brill patented convertible car and in addition embodies platforms for Pay-As-You-Enter fare collection. The design is the result of an effort to apply to the open car the prepayment idea, which has proved so successful with the closed cars recently built for the road by The J. G. Brill Company under license from the



CONVERTIBLE PAY-AS-YOU-ENTER CARS FOR NEW YORK — Car with Side Panels Removed for Summer Service — Sides Protected by a Metal Screen

Pay-As-You-Enter Car Corporation. To apply the prepayment idea it was necessary to eliminate the running board, which is ordinarily a feature of open cars. The further development of the arrangement indicated the wisdom of a convertible car which would provide all-the-year-around service and at slightly increased cost per car would give the equivalent of a double equipment consisting of open and closed cars which will require a much larger capital investment.

CONVERTIBLE PAY-AS-YOU-ENTER CARS FOR NEW YORK — Platform Arranged for Conductor's Use and Pay-As-You-Enter Fare Collection

The appearance of the cars for both winter and summer service is shown in accompanying engravings. In winter the openings between the posts are closed with a movable panel, extending from the bottom of the letter board to the top of sill, except in the spaces next to the corner posts, which are provided with fixed panels. The removable panels are made in one piece and arranged so that the upper half is fitted with glass. The lower half of this glass is set securely in the frame and the upper half is set in a sash, with bronze sash stiles, and drops on the inside of the car. The movable sash is fitted with bronze locks and the entire panel or frame is held in place with locks or fastenings so arranged that the frame can be quickly removed. For summer service, to insure safety to passengers and prevent boarding on the side, a metal screen in two

sections is attached to the posts. Storm curtains are also provided between the window posts as in other open cars.

The Pay-As-You-Enter platforms are of the type for double-end service, each platform having a double folding door on one side and a single sliding door on the other. When the platform is used by the conductors, the sliding door is locked and the other doors folded against the vestibule end of the platform. The arrangement of the platform rail is shown in the accompanying engraving of the platform and in the floor plan. This rail may be pushed up the central post and held against the platform roof by a catch, and that is the practice in changing from the conductor's to a motorman's platform. In making the change the double folding doors are closed and a bench may be placed alongside the doors, which give backing to passengers seated on the bench. This bench, when not in service, folds compactly behind the double doors. The arrangement of the bench is ingenious. At one end it is connected with a corner platform rail and at the other it rests on a bar across the exit door in the bulkhead of the car body. The middle of the bench is supported by a triangular strap casting swung over from the platform rail post to which it is attached. The single sliding platform door is used as an

CONVERTIBLE PAY-AS-YOU-ENTER CARS FOR NEW YORK—Front Platform Showing the Mutually Operating Sliding Door and Folding Step and Folding Bench

CONVERTIBLE PAY-AS-YOU-ENTER CARS FOR NEW YORK — Interior with Side Panels in Position for Winter Service — the Top Sash may be Lowered in Metal Sash Stiles

exit from the front platform. It slides into a pocket and has a handle on the inside only and a lock operated by the motorman. The door operates a folding step, which is so arranged that the door will close entirely should the step be up. When the door is opened the step is lowered. In converting the cars to summer service the single sliding platform doors are not changed, but the folding doors are replaced with a folding gate of the pantagraph type.

An interesting departure from the standard seating arrangement which has been used for so long in New York, is apparent in the floor plan of the cars. The cross-seats are of the Brill "Winner" pattern, 36 inches long, with reversible backs 18 inches high and provided with corner grab handles. The seats are upholstered with rattan. The corner longitudinal seats are made in two parts and hinged, except the section directly in the corner next to the

CONVERTIBLE PAY-AS-YOU-ENTER CARS FOR NEW YORK — Interior During Summer Service — Brill "Winner" Seats are Used

entrance door, which is stationary. The arrangement is such that maximum seating capacity may be secured at all times. The use of cross-seats, it is expected, will attract many passengers, especially during the summer months.

The cars are mounted on Brill No. 39-E center-bearing maximum traction trucks, which have a wheel base of 4′6″ and are equipped with Westinghouse 65 h.p. motors. The driving wheels are rolled steel, 33″ in diameter, and the trail wheels 21″, of cast chilled charcoal iron. The No. 39-E truck is one of the recent Brill products, which was described in detail in *Brill's Magazine* for November, 1908, and has had a remarkable sale in the short time in which it has been on the market. The truck is designed for a position under the car body which is the reverse of the heretofore general practice. By placing the pony wheels under the

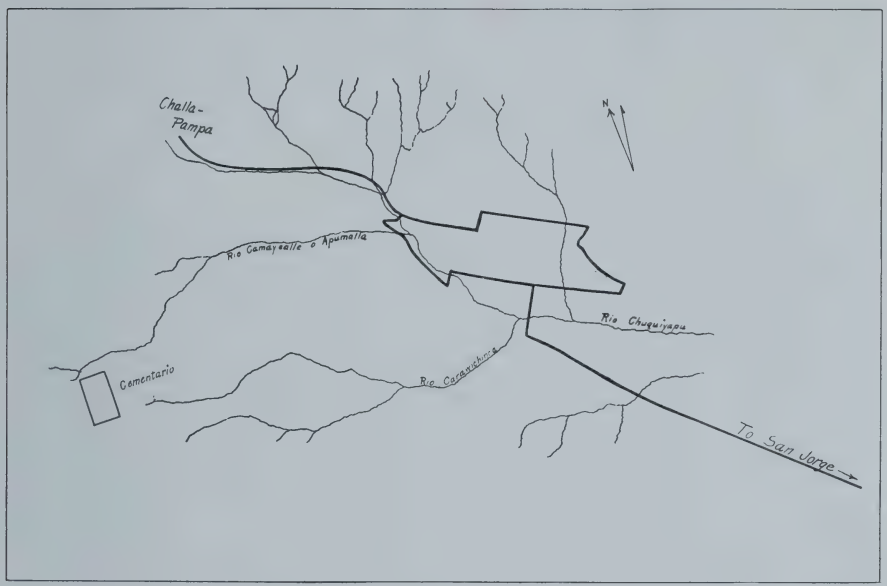
platform the overhang at each end of the car body is materially reduced. The success of the truck has been due, however, largely to the fact that, equipped with a single 65 h.p. motor, it may be substituted for a two-motor truck and a very decided saving effected in first cost, maintenance charges, and in cost of operation, owing to the reduction in weight.

In connection with the use of the Pay-As-You-Enter system the railway company employs a fare box of the type shown in the accompanying engraving. The box is mounted on the platform rail and is raised with the rail against the platform roof when the conductor's platform is changed for the motorman's use. The fare box is made entirely of metal and is 9¼" x 6½" at the base and stands 14" high. The cash boxes, which are locked in the base to receive the fares and are automatically closed and locked when the drawer is opened, are interchangeable. The regular equipment furnished with each fare box is two cash boxes. Each box will hold $140 in mixed change, $80 in dimes or $40 in nickels. These amounts are not apt to accumulate between the intervals at which the cash boxes would ordinarily be changed.

CONVERTIBLE PAY-AS-YOU-ENTER CARS FOR NEW YORK—The Brill No. 3-A Fare Box is Mounted on the Platform Rail

Brill Cars for the Capital of Bolivia

La Paz, the capital and chief commercial center of Bolivia, with an area of ten and one-half square miles, heretofore has had no street railway service; but about the time this article appears



CARS FOR THE CAPITAL OF BOLIVIA — Outline Map of the La Paz Tramways Which Connect at Challa-Pampa With the Guaqui-La Paz Railway

there will be placed in service a modern electric railway equipped with Brill cars which were ordered through W. R. Grace & Co.,

CARS FOR THE CAPITAL OF BOLIVIA — Construction Car Mounted on Brill No. 21-E Truck

Cars for the Capital of Bolivia — A Portion of the City of La Paz Which is Situated in a Valley Among the Mountains at an Elevation of 12,470 Feet above Sea Level

of New York. This electric railway will connect on the outskirts of the city with the Guaqui-La Paz Railway, which for five and one-half miles is electrified and also operates Brill cars.

La Paz has the unique distinction of being the highest capital in the world, its altitude above sea level being 12,470 feet. The city lies in a deep valley surrounded by lofty mountains, the Illimani, 22,500 feet, being the highest of the overshadowing peaks. The streets are narrow, irregular, and generally steep, with the result that the grades of the electric railway frequently are eight and twelve per cent. The principal thoroughfare of the city is the Alameda, which is entered by three gates and contains three avenues for walking and two for horseback riding, which are separated by rows of trees and ornamental plants. This avenue is 1,800 feet long and 118 feet wide, and will be traversed by the cars of the La Paz Tramway.

Cars for the Capital of Bolivia — A Continuation of the Bird's Eye View Shown on the Opposite Page — Mt. Illimani, 22,500 Feet in the Background

The population of La Paz is 60,000, of which 14,000 are white persons and the balance Indians and mixtures. The streets of the city are lighted by electricity, and there is underground drainage, and telephone and telegraph service is maintained. There is a university supported by the government, a medical school, a scientific school, military school, school of arts and trades, and a school of commerce. The city railway has communication with the outside world only by the Guaqui-La Paz road which has been mentioned. It is 56 miles in length and has its western terminus at Guaqui, on Lake Titicaca. The cars for the La Paz Tramway were carefully built in sections and boxed for ocean transportation, in accordance with the usual practice for export shipments, and on the last stage of their journey passed over the Guaqui-La Paz Railway. Prior to their arrival at Guaqui,

they were handled five times. From the factory at Philadelphia they were shipped by rail to Jersey City, loaded on lighters, brought alongside the vessel of W. R. Grace & Co., which from New York went around "the Horn," through the Straits of Magellan to Mollendo, on the west coast of Peru. From Mollendo the Southern Railway of Peru carried them 324 miles to Puno, on Lake Titicaca, across which they were transported by steamer 28 miles to Guaqui. The minimum time required in freight transportation from New York to La Paz via the Straits of Magellan is 56 days. By trans-shipping at Panama the time can be reduced to 37 days. The cars were shipped in March, and will probably reach La Paz the first of June. A map of the route over which they will operate in the city of La Paz is presented in an accompanying engraving, through the courtesy of the Bolivian Consul, Mr. José Aguirre-Achà. From the point called Challa-Pampa, where the terminal station of the Guaqui-La Paz Railway is located, the road extends to the principal plaza of La Paz. From this point two lines run to the lower part of the city, the distance from the railroad station to the end of the line at

CARS FOR THE CAPITAL OF BOLIVIA — Scene in the Calle De Lacarnaca La Paz — Native Shops on the Right

CARS FOR THE CAPITAL OF BOLIVIA — First Class-Car Mounted on Brill No. 21-E Truck — Second-Class Cars of Similar Appearance and Combination Cars were also Furnished

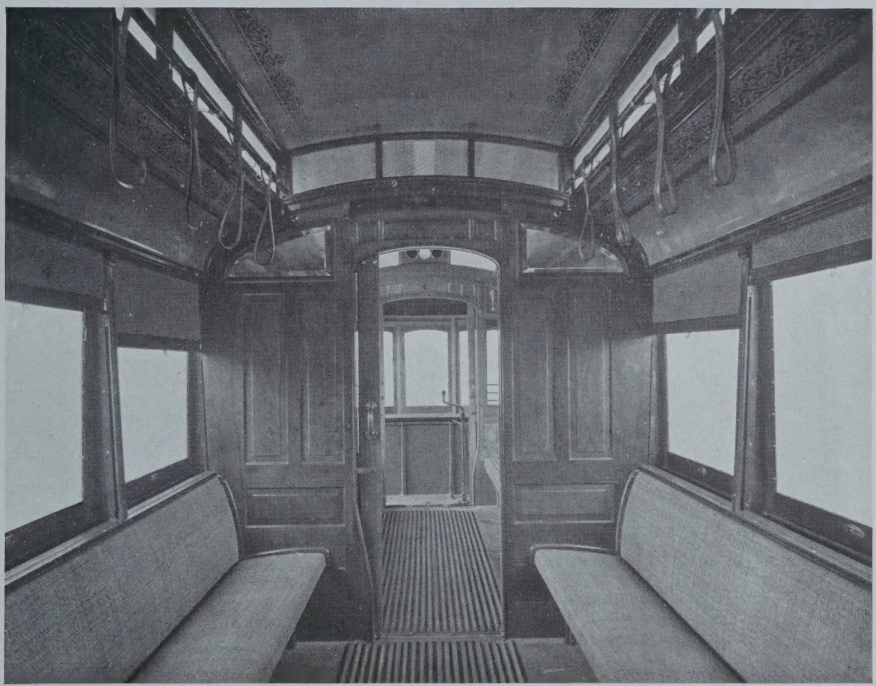
San Jorge, which is beyond the limits of the map, being about two and one-half miles by either route.

CARS FOR THE CAPITAL OF BOLIVIA — Interior of First-Class Car — The Window Sash may be Lowered into Wall Pockets — The Finish is Cherry

The initial rolling stock for the La Paz Tramways consisted of eight cars of similar dimensions but of three distinct classes. There are three first-class cars, three second-class cars and two combination first- and second-class cars, all of which are mounted on Brill No. 21-E trucks for 3′3⅜″ gauge track. The first-class cars are painted maroon, the second-class cars yellow, and the com-

Cars for the Capital of Bolivia — Interior of Second-Class Car Which is Finished in White Ash

bination cars dark green. The first-class cars have cherry interior finish, with three-ply birch veneer ceilings and longitudinal rattan covered seats which will accommodate 24 persons. The second-class cars have white ash interior and the ceiling is finished with the alternate ash and cherry roof boards showing. The seats and backs are of ash slats. In the first-class cars printed duck curtains are used, and in the second-class cars, ash blinds with maple slats. The first-class cars have bronze trimmings throughout, whereas, for the second-class equipment, malleable iron is used.



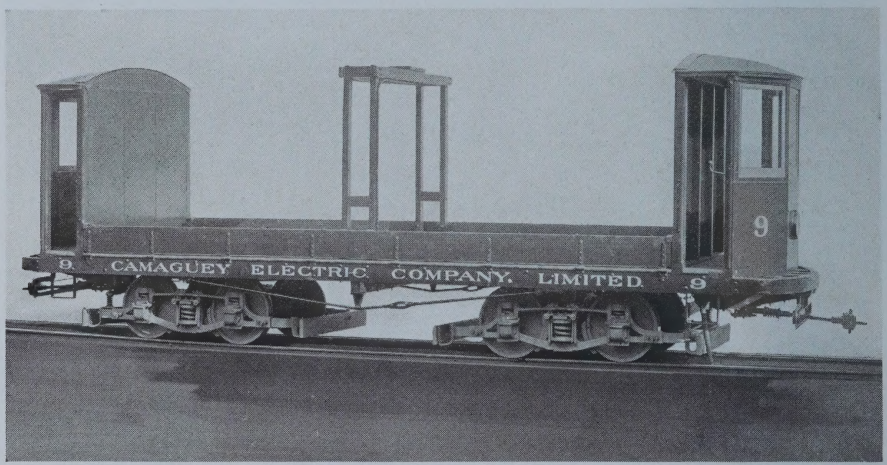
CARS FOR THE CAPITAL OF BOLIVIA — Interior of First-Class Compartment of One of the Combination First-and Second-Class Cars

The two combination cars each have a center partition with sliding door, which divides the car into first- and second-class compartments, equipped respectively the same as the cars of the corresponding class. The following dimensions apply to all of the cars: Length of car body over end panels at sill, 18′; length over platforms, 26″; width of car at sill, including panels, 6′3″; width of car body over posts above belt rail, 7′6″. The special equipment includes Brill channel iron gates, Brill portable vestibule, angle iron bumpers, ratchet brake handles, Brill Hovey draw bars, Dumpit sand boxes, Dedenda gongs and Retriever signal bells.

Platform Construction Car for Cuba

A general utility or construction car is usually one of the first to be acquired by an electric railway. Frequently a second-hand car is purchased because it can be secured for a comparatively low

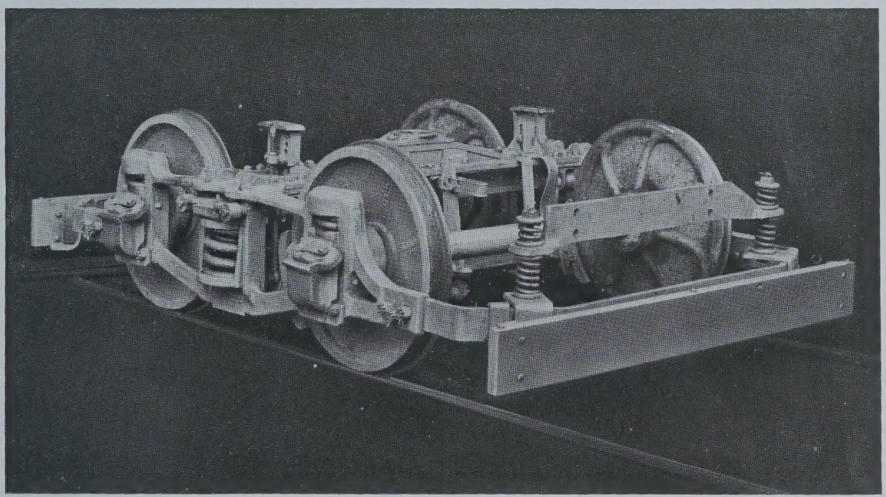
price. But the frequent repairs which second-hand equipment usually require, and the fact that a construction car is continually brought into service after the road is completed, has shown to many managers that a real economy is the purchase of a new car especially designed for the road on which it is to be operated.



PLATFORM CONSTRUCTION CAR FOR CUBA — Mounted on Brill No. 34 Trucks

The accompanying engraving shows a 30′ construction car mounted on Brill No. 34 trucks for service in the province of Puerto Principe, Cuba. The framing of the car is substantial for the comparatively short body, 3¾″ x 7¼″ center sills, 3¾″ x 5½″ intermediate sills and 3¾″ x 7½″ side sills plated with ¾″ steel being used. The crossings are of oak 3¾″ x 6¾″ and the bolster built up from steel plates. The truss rods are of double refined iron 1⅛″ in diameter, and the underframing is further re-inforced with the Brill angle iron bumpers. The 12″ drop sides make it possible to carry a fairly large load of earth or gravel ballast and to unload it quickly. The vestibules are sheathed with No. 14 steel to protect them against damage by rock, rails or other rough material loaded on the car.

The Brill No. 34 trucks on which the car is mounted are of an admirable type for construction car use, as they are very substantially built, have a spring arrangement and bolster relief springs which enable movement over roughly laid track without



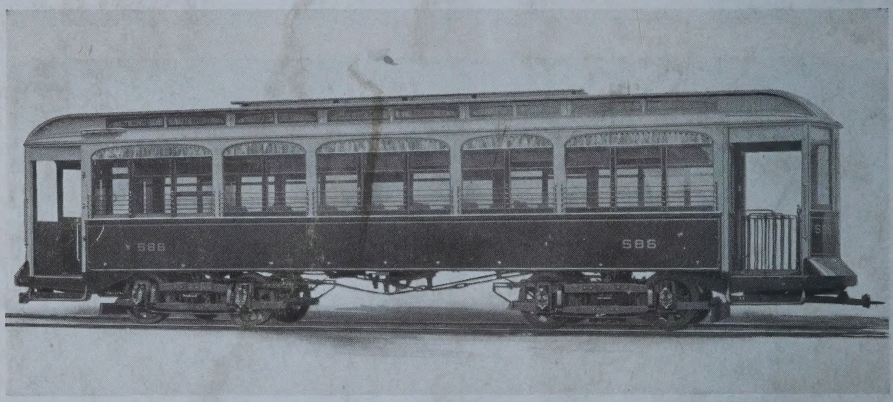
PLATFORM CONSTRUCTION CAR FOR CUBA — Brill No. 34 Truck for Motor or Trail Car Service

derailment, and are of moderate cost owing to the use of cast steel instead of the solid forged steel side frames which are the general rule for Brill trucks. The No. 34 truck is also of a type suitable for either trail or motor service, but in this instance is built for one motor per truck. The dimensions as constructed for the car for Cuba were: Wheel base 4′; wheels 30″ cast chilled iron; gauge 4′ 8¼″; axles 4″ in diameter.

Additions to the List of Brill Publications

A new catalogue, printed in English, French, Spanish and German, has just been issued in the interest of the Wason Manufacturing Company whose output is to be found on many of the most prominent steam railways throughout the world. Railway officials may obtain copies upon application to the Wason Manufacturing Company, Springfield, Mass., U. S. A.

The Advertising Department, The J. G. Brill Company, Philadelphia, U. S. A., has now in course of preparation and will mail at an early date a catalogue of the Brill Centrifugal Sprinkler and a catalogue of Brill Seats and Seating Material for Steam and Electric Railway Cars.



Brill Washington Type Window Arrangement

(Patented)

The only practical adaptation of the Pullman arch-top window for electric railway cars. Gives unusual exterior beauty, maximum window area and interior light.

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